

What is claimed is:

1. A permanent seafloor seismic data acquisition apparatus, comprising:
a sensor block deployable on a seafloor for gathering seismic information,
5 the sensor block having a node architecture including;
a backbone;
a hub; and
one or more sensor modules, wherein the one or more sensor
modules form one or more sensor lines, and wherein the one or
10 more sensor lines form the hub.
2. The apparatus of claim 1, wherein the one or more sensor modules are
disposed along a sensor line trenched to in the seafloor.
- 15 3. The apparatus of claim 1, wherein the one or more sensor modules
include a multi-axis accelerometer.
4. The apparatus of claim 3, wherein the multi-axis accelerometer includes a
3-C accelerometer.
- 20 5. The apparatus of claim 4, wherein the one or more sensor modules further
comprise a hydrophone disposed in a housing for providing a 4-Component
output signal from the one or more sensor modules.
- 25 6. The apparatus of claim 1 further comprising a central recorder disposed at
a surface location and coupled to the backbone.
7. The apparatus of claim 1 further comprising a cable including a wire
conductor for transferring data from the one or more sensor modules to the
30 backbone.

8. The apparatus of claim 1 further comprising a cable including an optic fiber for transferring data from the one or more sensor modules to the backbone.
9. The apparatus of claim 1, wherein the backbone, hub, and sensor modules are remotely deployable on the seafloor.
10. The apparatus of claim 1 further comprising a remotely operated vehicle for deploying the backbone, hub, and sensor modules at the seafloor.
11. A system for seismic data acquisition comprising:
a surface controller controlling the system; and
a seafloor subsystem comprising sensor block deployable on a seafloor for gathering seismic information, the sensor block having a node architecture including;
a backbone in communication with the surface controller;
a hub; and
a one or more sensor modules, wherein the one or more sensor modules form one or more sensor lines, and wherein the one or more sensor lines form the hub.
12. The system of claim 11 further comprising an acoustic source for providing acoustic energy, the acoustic energy being sensed by the sensor one or more modules.
13. The system of claim 11 further comprising a wet connector to provide system scaling.
14. The system of claim 11, wherein the backbone comprises a plurality of hubs.

15. The system of claim **11**, wherein the hub comprises at least two sensor lines, each sensor line having a plurality of sensor modules attached thereto.
16. The system of claim **11**, wherein the one or more sensor modules include
5 a multi-component sensor.
17. The system of claim **11**, wherein the one or more sensor modules include a multi-component MEMS accelerometer.
- 10 18. The system of claim **11**, wherein the one or more sensor modules further comprise a hydrophone in an underwater housing.
19. A method of assembling a permanent seafloor seismic data acquisition apparatus, comprising:
- 15 assembling one or more sensor modules to form one or more sensor lines;
assembling the one or more sensor lines to form one or more sensor hubs;
assembling the one or more sensor hubs to form one or more
20 sensor backbones; and
assembling the one or more sensor backbones to form one or more sensor blocks.
20. The method of claim **19** further comprising deploying the one or more
25 sensor blocks at a seafloor location.
21. The method of claim **20** further comprising testing the one or more sensor modules before deploying the one or more sensor blocks.
- 30 22. The method of claim **20** further comprising deploying the sensor blocks using a remotely operated vehicle.